

**Testimony of Thomas R. Howell
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**Before the
US China Economic & Security Review Committee
Hearing on
China's Green Energy and Environmental Policies**

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Members of the Commission, I am Thomas R. Howell, of counsel in the Washington office of the law firm of Dewey & LeBoeuf LLP. I am a co-author of a study prepared by my firm on behalf of the National Foreign Trade Council which surveys Chinese government policies promoting the development of that country's renewable energy equipment industries. I appreciate the opportunity to appear before you today.

Governments around the world are taking measures to support the development of industries associated with renewable energy, including the production of renewable energy equipment. China's effort is singular, however, because of its sheer scale and the speed at which it is being implemented.

China views the promotion of clean and renewable energy as a national security matter. Periodic shortages of electricity have already caused economic dislocation, and China's continued economic growth – and stability – ultimately rests upon the availability of adequate supplies of energy. Environmental degradation and global warming are seen as factors underlying natural disasters which will increase in intensity and scope if present trends continue.

The challenge China confronts is stark. At present rates of extraction China will run out of domestic sources of petroleum, natural gas and coal in an estimated 7, 22 and 75 years, respectively. Coal currently accounts for over 76 percent of China's energy production. Its extraction is difficult and the burning of coal is a major source of greenhouse gas emissions. At the 2009 UN Copenhagen Conference on Climate Change, China announced a plan to cut down its carbon density, slashing CO² emissions per unit of GDP by 40 to 45 percent between the base year 2005 and 2020. This will require a massive shift toward renewable sources of energy.

At present by far the most important form of renewable energy in China is hydropower. For decades the government poured resources into the creation of mega-dams on China's rivers, the most famous of which is the nearly-complete Three Gorges Dam. The Three Gorges project alone has already reduced the need for coal consumption by 31 million tons of coal per year. However, China's dam-building initiatives have displaced millions of residents, leading to social unrest, political controversy, and occasional violent protests. The big dams are suspected to have caused landslides, sinkholes, earthquakes, droughts and various other forms of environmental degradation. As a result, while China remains strongly committed to expanding hydropower generation, it is reducing the role it will play relative to that of the so-called "new renewables," wind, solar and biomass.

In 2008, wind power accounted for 12.2 GW of electrical power in China, versus 121 GW for large hydropower — in other words, mega-dams currently produce about ten times as much

electricity as wind power. By 2020, Chinese planners expect wind power to produce 200 GW of electricity, an amount nearly equal to the 225 GW foreseen for large hydropower in that year. (See table at the end of this testimony.) China has repeatedly exceeded targets set for wind power capacity, surpassing the 2010 target, for example, in 2008.

The government role in promotion of renewable energy has been pervasive, with the government deploying a comprehensive series of measures to promote the “new renewable” industries. Most of these measures explicitly encourage the developers of power projects in China to use renewable energy equipment that is produced in China by Chinese companies.

- In 2004, the National Development and Reform Commission (NDRC), an economic planning organization with jurisdiction over energy, introduced the Wind Power Concession Project, a program designed to promote the establishment of very large scale wind farms to generate electricity for national grids. Under this program electric utilities enter into long-term power purchase agreements with wind farm developers with the agreement covering the entire forecast operational period of the wind farm, reducing the risk for the developers. End users of electricity receive a tariff increase to cover the increased cost of wind power. The NDRC is overseeing construction of a series of “Three Gorges in the Air,” mega-wind farms generating ten or more gigawatts (GW) of electricity. The NDRC-sponsored wind farms are forecast eventually to account for most of the wind power produced in China, and therefore represent the principal future market for wind power equipment. No contract has been awarded to a wind developer by the NDRC using equipment made by foreign firms (including foreign firms manufacturing in China) since 2005.
- In 2005, the NDRC issued The Notice of Requirements for the Administration of Wind Power Construction, which provided that no wind farm could be constructed in China that did not meet a 70 percent local content requirement. This measure increased domestic demand for Chinese-made wind equipment components, induced a number of foreign wind equipment firms to establish manufacturing facilities in China to satisfy the local content requirement, and was credited by Chinese observers with enabling the domestic wind equipment industry to form a complete industrial chain.
- In 2006, China enacted the Renewable Energy Law, which established a framework under which utilities were required to pay full price for electricity generated by renewable energy sources while offering consumers of renewables-generated electricity discounted rates. It was amended in 2009 to require utilities to purchase all renewable power generated in China. This measure has encouraged entry into the renewable energy generation business and increased the demand for renewable power equipment.
- In 2006, three Chinese ministries jointly released the Provisional Measures for the Accreditation of National Indigenous Innovation Products (NIIP) which provides for a process under which products made with “indigenous” (*e.g.*, Chinese) intellectual property could qualify for “priority” in government procurement and

“national key projects that will spend Treasury funds.” Because it is proving very difficult for foreign enterprises to qualify for “indigenous” status under this program, the measure effectively leads to application of procurement preferences favoring domestic renewables equipment manufacturers by the SOEs who develop China’s renewable energy generation projects.

- In 2007, the NDRC released the Medium and Long-Term Development Plan for Renewable Energy in China, which required power companies which owned installed capacity of over five GW to have non-hydro renewable energy installed power capacity accounting for three percent of total capacity by 2010 and eight percent by 2020. This measure has triggered a surge of investment in the wind equipment industry, reflecting the fact that wind power equipment was less costly to install and operate than solar and biomass alternatives.
- In November 2008, China implemented a \$586 billion economic Stimulus Package, allocating a major portion of the government spending to renewable energy projects. A circular jointly released by nine government organizations requires that preference be given to domestic products with respect to stimulus spending. This combination of measures virtually ensures a massive volume of sales of domestically-manufactured renewable energy equipment.
- In 2009, three Chinese Ministries jointly announced the Golden Sun Demonstration Program, which will provide investment subsidies equal to 50 percent of the investment cost for grid-connected solar power systems. Although it is too soon to assess the impact of this measure, the subsidy is so large that it is virtually certain to increase the demand for solar power generating equipment.

The market impact of China’s “buy domestic” policies is most evident in the wind power equipment sector. There has been a virtual explosion in investment in wind power equipment manufacturing in China, and Chinese equipment has been displacing foreign equipment. Foreign-made wind power equipment, primarily European, accounted for about 75 percent of the new capacity installed in China in 2005. By 2008 the foreign share had fallen to 24 percent, and by some estimates it will drop this year to 5 percent.

Many observers believe that China’s “buy national” policies are resulting in the installation of renewable energy generating capacity that is less efficient than it would be if foreign equipment was utilized. Reflecting wind farm developers’ preference for foreign-made equipment, foreign wind power firms continue to enjoy a market in China with respect to smaller wind farm projects of under 50 MW capacities, which do not require central government approval.

China’s leaders appear to have accepted the fact that their aggressive target of reducing carbon emissions by 40-45 percent per unit of GDP by 2020 will impose constraints on economic growth. The School of Environmental Studies at Chinese People’s University recently concluded a study which calculated that achieving the 40-45 percent target set by the government entails a cost of roughly 1 percent of GDP, reflecting the fact that many of the easier ways to

reduce emissions have already been carried out and the potential for further incremental reductions grows progressively smaller and more difficult.¹

China has emerged as one of the world's leading producers of energy from renewable resources. China now is among the world leaders not only in installed renewable energy capacity, but also total current investment in renewable energy. While to a considerable extent these developments reflect the impact of China's giant hydropower projects and the continuing installation of small hydropower facilities, China's renewable energy profile is increasingly defined by "new renewable" sources of electricity: solar, wind and biomass power. China has emerged as a world leader in the manufacture of solar photovoltaic technology and could become the world's leading exporter of wind turbines.

China's environmental policies have a number of implications for the United States. To the extent that China's broad effort to curtail carbon emissions is successful, the United States and the world as a whole are beneficiaries. At the same time, China's "buy national," policies with respect to renewable energy equipment are foreclosing one of the world's major markets for "green" products that are seen as important to our own country's economic future. The United States is collaborating with China with respect to environmental challenges confronting both countries. In this context the US should acknowledge China's recent contribution to the struggle against global climate change but also continue to raise concerns over what appears to be the implementation of protectionist measures with respect to renewable energy equipment.

¹ "China Says Goodbye to Mr. No with Dramatic Reductions of Emissions to Fight Global Warming," *Wen Wei Po Online* (December 8, 2009).

**Current Capacity Targets for China's
Renewable Energy Development Program to 2020**

Type	2008 Actual	2010 Target	2020 Target
Hydropower	172 GW	190 GW	300 GW
large	121 GW	140 GW	225 GW
small	51 GW	50 GW	75 GW
Wind power	12.2 GW	10 GW	200 GW
Solar PV	0.14 GW	0.3 GW	20 GW
Solar water heating	135 million m2	150 million m2	300 million m2
Biomass power	3.6 GW	5.5 GW	30 GW
Bioethanol	1.5 million tons	3 million tons	10 million tons
Biodiesel	0.08 million tons	0.2 million tons	2 million tons

Source: NDRC, Medium and Long Term Development Plan for Renewable Energy in China (September 2007); United Nations Environment Programme, Global Trends in Sustainable Energy Investment 2009 (June 2009); MangoStrategy LLC, The China Greentech Report 2009 (September 2009).